



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,957	03/19/2004	Jean-Michel Franchet	250653US41	7171
22850	7590	10/18/2006		
C. IRVIN MCCLELLAND OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
			EXAMINER ABOAGYE, MICHAEL	
			ART UNIT 1725	PAPER NUMBER

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/803,957	Applicant(s) FRANCHET ET AL.	
	Examiner Michael Aboagye	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-10 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03/19/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallis (US Pub No. 2001/0022023) in view of Turner (US patent No. 4869422).

Wallis discloses a process for manufacturing a hollow stack (94) by diffusion bonding and superplastic forming, comprising the following steps: at least two primary sheets (90,92) are provided, said primary sheets having mating faces and a periphery; a stop-off material (116) is deposited in a predefined pattern on at least one face of each

Art Unit: 1725

pair of those intended mating faces of the said primary sheets; said primary parts are joined together around their said periphery with the exception of a place forming a passage; a pipe (122) is joined to the stack to form a welded assembly, wherein the joining is done such that the pipe is welded around the periphery to project from the primary sheets so that it communicates with the pairwise groove or cavity (124,126); the pipe is connected to a vacuum pump to evacuate the cavity of the stack to partial vacuum and purged with argon to ensure removal of all traces of oxygen between the primary sheets; the welded assembly is evacuated and placed in an oven, and heated to the thermal degradation temperature of the said binder, thereby allowing the gases resulting from the degradation of the binder to be evacuated continuously, after baking the assembly is cooled and the pipe is sealed, the assembly is set in an autoclave and heated to the diffusion bonding temperature, pressure is applied to cause the stack assembly to undergo hot isostatic pressing diffusion bonding; the pipe is separated from the bonded stack is placed in a die; and the said die is brought to the superplastic forming temperature and an inert gas is injected under the superplastic forming pressure via the said passage in the said cavity, whereby the stack undergoes inflation and superplastic forming a blank turbine engine fan blade ( see figures 1, 3-5, abstract, paragraph, [0008]- [0062]).

Wallis does not teach attaching a reservoir to the stack assembly to suck out the gases resulting from the degradation of the binder.

However, Turner teaches a method of liquid interface diffusion bonding a host tabular member (10) to tubular cladding member (14), wherein the cladding member is

Art Unit: 1725

telescopically inserted into the host member leaving an annular space (20) therebetween; a bonding alloy (12) and flux is applied to the faying surfaces of the joining members; the first end 14B of the cladding member is welded to the first end 10B around the entire circumference of the host member to form an airtight seal annular space, the annular space is evacuated and purged with an inert gas through an opening (30); a reservoir (bag) made of a metallic material is joined to the two joining members to communicate with the annular space via the opening (30) to form an assembly, the assembly is heated under pressure to cause the host member to bond with the cladding member followed by rolling, wherein the reservoir which is removed after the bonding process facilitates in the evacuation of the annular space thereby preventing reintroduction into the annular space, water vapor, oxygen and contaminants during heating which when present will compromise the integrity of the rolling step and the final product (see Turner, figure 1 and 2, column 2, line 25 – column 5, line 67).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to have modified the method of Wallis to include an attached evacuation reservoir in view of Tuner to allow evacuation of burn offs or contaminants given off during the heating process with the advantage of safeguarding the integrity of the bond formed between the joining members (see Turner, column 4, lines 43 – 68).

Art Unit: 1725

3. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salt (US patent No. 5711068) in view of Turner (US patent No. 4869422).

Salt discloses a process for manufacturing a hollow stack from a preform (80) by diffusion bonding and superplastic forming, comprising the following steps: at least two primary sheets (6,7) are provided, said primary sheets having mating faces and a periphery; a stop-off material is deposited in a predefined pattern on at least one face of each pair of those intended mating faces of the said primary sheets; said primary parts are joined together around their said periphery with the exception of a place forming a passage; a pipe (81) is joined to the stack to form a welded assembly, wherein the joining is done such that the pipe is welded around the periphery to project from the primary sheets so that it axially communicates with the passage cavity; the pipe is connected to a vacuum pump to evacuate the interior of the stack to partial vacuum and purged with argon to ensure removal of all traces of oxygen between the primary sheets; the welded assembly is evacuated and placed in an oven, the welded assembly is heated to the thermal degradation temperature of the said binder, thereby allowing the gases resulting from the degradation of the binder to be evacuated continuously, after baking the assembly is cooled and the pipe is sealed, the assembly is set in an autoclave and is heated to the diffusion bonding temperature and pressurized to the diffusion bonding pressure, which causes said stack to undergo hot isostatic pressing diffusion bonding; the pipe is separated from the bonded stack is placed in a die; and the said die is brought to the superplastic forming temperature and an inert gas is injected under the superplastic forming pressure via the said passage in the said cavity,

Art Unit: 1725

whereby the stack undergoes inflation and superplastic forming a blank turbine engine fan blade (see figures 1, 8, abstract, column 1, line 1 –column 2line 67, and column 3, line 1 – column 5 line 67).

Salt does not teach attaching a reservoir to the stack assembly to suck out the gases resulting from the degradation of the binder.

However, Turner teaches a method of liquid interface diffusion bonding a host tabular member (10) to tubular cladding member (14), wherein the cladding member is telescopically inserted into the host member leaving an annular space (20) therebetween; a bonding alloy (12) and flux is applied to the faying surfaces of the joining members; the first end 14B of the cladding member is welded to the first end 10B around the entire circumference of the host member host to form an airtight seal annular space, the annular space is evacuated and purged with an inert gas through an opening (30); a reservoir (bag) made of a metallic material is joined to the two joining members to communicate with the annular space via the opening (30) to form an assembly, the assembly is heated under pressure to cause the host member to bond with the cladding member followed by rolling, wherein the reservoir which is removed after the bonding process facilitates in the evacuation of the annular space thereby preventing reintroduction into the annular space, water vapor, oxygen and contaminants during heating which when present will compromise the integrity of the rolling step and the final product (see Turner, figure 1 and 2, column 2, line 25 – column 5, line 67).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention were made to have modified the method of Salt to include an

Art Unit: 1725

attached evacuation reservoir in view of Tuner to allow evacuation of burn offs or contaminants given off during the heating process with the advantage of safeguarding the integrity of the bond formed between the joining members (see, Turner, column 4, lines 43 – 68).

### ***Response to Arguments***

4. The examiner acknowledges the applicants' amendment received by USPTO on July 24, 2006. Claims 1-6 remain are withdrawn from prosecution therefore claims 7-10 currently remain under consideration in the application.

5. Applicant's arguments filed July 24, 2006 have been fully considered but they are not persuasive. Applicant assert that Turner reference is non-analogous art with respect to the claimed invention and that Turner teaching is not directed to diffusion welding and superplastic forming. The examiner takes note of the fact that Turner's teaching lack plastic forming, however the teaching is drawn to diffusion welding (Turner, abstract; column 4, lines 32-35 and column 5, lines 32-36). It is also noted that Turner's reference is not required to teach superplastic forming since the limitations in the claimed invention drawn to such technique have already been met by both Wallis and Salt taken individually. Moreover the limitations said to be lacking in the teachings of both Wallis and salt are only specific to the diffusion boding step. Turner teaches a stack of plates "32" and "36" having a space "44" defined therebetween, welding an open ended portion a gas bag "40" (reservoir) to allow communication between the internal space of the reservoir and the space "44" between the stack of space (Turner, figure 2 and column 5,



Art Unit: 1725.

lines 32-40) and evacuating the space "44" by vacuum purging via the reservoir during the diffusion bonding step. It is noted that the reservoir as claimed by the applicant and the teachings of Turner share the above common features as described above. Therefore the combination of Turner with either Wallis or Salt meets the limitations set forth in the claimed invention. The rejections of claims 7-10 under 35 U.S.C. 103(a) remains valid.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Aboagye whose telephone number is 571-272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.


Art Unit: 1725

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AM  
AM

  
JONATHAN JOHNSON  
PRIMARY EXAMINER

  
Michael Aboagye  
Assistant Examiner  
Art unit 1725  
10/06/2006